9.4.1 Case Study, The Adam Joseph Lewis Center for Environmental Studies, Oberlin College; Oberlin, Ohio (Education)

Building Design

Floor Area: 13,600 SF Floors: 2 Footprint: 140 ft. x 45 ft. with attached 100-seat auditorium

3 Classrooms (1)	1 Conference Room	1 Adminstration Office
Auditorium, 100 seats	6 Small Offices	Atrium
Wastewater Treatment Facility		

Shell

Windows Material: Green Tint Triple Pane Argon Fill Insulating Glass
Grey Tint Double Pane Argon Fill Insulating Glass

Fenestration(square feet)

	Window	Wall(2)	window/wall		Atrium, Triple Pane (3)		Building, Double Pane	
North	1,675	4,372	38%		U-Factor	0.34	U-Factor	0.46
South	2,553	4,498	58%		SHGC	0.26	SHGC	0.46
East	1,084	2,371	46%					
West	350	2,512	14%					
Overall	6,063	14,153	43%					

Wall/Roof

	Main Material	R-Value
Wall :	Face Brink	19
Roof:	Steel/Stone Ballast	30

HVAC

		COP(4)
Offices/Classrooms:	Individual GSHPs (5)	3.9-4.6
	1 Large GSHP for ventilation	3.8
Atrium:	Radiant Flooring Hydronic Heating System	
Auditorium:	1 Standard Range Water Heat Pump	4.2

Lighting Power Densities (W/SF)

Offices:	0.88	Corridors/Others:	0.45	Total Building:	0.79
Classroom/Lecture Halls:	1.18	Atrium:	0.93		

Energy/Power

PV System:	60 kW grid-tie roof system
Net Annual Energy Usage (thousand Btu/SF*year)	16.4

Note(s): 1) Two classrooms seat 36 and one seats 18. 2) Wall total area includes window area. 3) Atrium has only south, north, and east facing windows. 4) Coefficient of performance ranges due to various sizes; GSHPs have the greatest COP 5) GSHP is Ground water Source Heat Pump.

Source(s): NREL, Energy Performance Evaluation of an Educational Facility: The Adam Joseph Lewis Center for Environmental Studies, Oberlin College, Oberlin, Ohio, November 2004, Table 4.1 p. 10 Table 4.2 p.12 and Table 6.5 p. 94; NREL, Lessons Learned from Case Studies of Six High-Performance Buildings, June 2006, p. 5 Table A-2 p. 130